2016 WORLD FEDERATION OF CHIROPRACTIC/ASSOCIATION OF CHIROPRACTIC COLLEGES EDUCATION CONFERENCE ABSTRACTS OF CONFERENCE PROCEEDINGS

PLATFORM PRESENTATIONS

The treatment of neck pain-associated disorders and whiplash-associated disorders: a clinical practice guideline

André Bussières, Greg Stewart, Fadi Al Zoubi, Philip Decina, Martin Descarreaux, Jill Hayden, Brenda Hendrickson, Cesar Hincapié, Isabelle Pagé, Steven Passmore, John Srbely, Maja Stupar, Joel Weisberg, Joseph Ornelas

Objective: To develop a clinical practice guideline on the management of Neck Pain-Associated Disorders (NAD) and Whiplash-Associated Disorders (WAD). **Methods:** Pertinent systematic reviews on 6 topic areas (education, multimodal care, exercise, work disability, manual therapy, passive modalities) were assessed using AMSTAR and data extracted from admissible randomized controlled trials. We incorporated risk of bias scores in GRADE. Evidence profiles were used to summarize judgments of the evidence quality, detail relative and absolute effects, and link recommendations to the supporting evidence. The guideline panel considered the balance of desirable and undesirable consequences. Consensus was achieved using a modified Delphi. The guideline was peer reviewed. **Results:** For recent-onset (0–3 months) neck pain, we suggest offering multimodal care; manipulation or mobilization; range of motion home exercise, pain/anti-inflammatory medication, or multimodal manual therapy (for grades I–II NAD); supervised graded strengthening exercise (grade III NAD); and multimodal care (grade III WAD). For persistent (over 3 months) neck pain, we suggest offering multimodal care or stress self-management, manipulation with soft tissue therapy, high dose massage, supervised group exercise, supervised yoga, supervised strengthening exercises or home exercises (grades I–II NAD), multimodal care, and/or practitioner's advice (grades I–III NAD), and supervised exercise with advice or advice alone (grades I–II WAD). For workers with persistent neck and shoulder pain, evidence supports mixed supervised and unsupervised high-intensity strength training or advice alone (grades I–III NAD). **Conclusions:** A multimodal approach including manual therapy, self-management advice, and exercise, is an effective treatment strategy for recent-onset and persistent neck pain. (This is a conference presentation abstract and not a full work that has been published.)

The Masters in Chiropractic Medicine: a critical review of the Swiss curricular model

B. Kim Humphreys, Cynthia Peterson

Objective: As a result of the revised Swiss Medical Law in 2007, Chiropractic became one of the 5 medical professions and required an educational program be established within a Swiss university medical school. In September 2008, the first cohort of chiropractic students began their studies at the University of Zürich, Faculty of Medicine. The new program required the integration of chiropractic courses within the 6-year medical curriculum. This presentation will reflect on the strengths and challenges of the current 6-year Master of Chiropractic curricular model from the perspective of two recent accreditations. **Methods:** The self-study and international expert reports from the Swiss Government accreditation in 2014 and the European Council on Chiropractic Education accreditation in 2016 provided an opportunity to reflect on the strengths, challenges, and opportunities of the Master of Chiropractic Medicine program at the University of Zürich. **Results:** Strengths of the curricular model included bright and motivated students due to the difficult medical entrance examination, depth and breadth of human and clinical sciences, clinical rotations with patient contact, integration of chiropractic and medical clinical sciences, breaking down barriers and building bridges with medical students and professors. The challenges include the heavy curricular load and developing a strong chiropractic identity within the early years of the program. **Conclusions:** The M Chiro Med curricular model provides a unique opportunity for the interprofessional integration of chiropractic within a medical curriculum. Although some challenges have been encountered the outcomes and opportunities outweigh the disadvantages, especially in terms of building bridges and breaking down barriers. (This is a conference presentation abstract and not a full work that has been published.)

Use of social media and online communication: current state of the evidence regarding "eprofessionalism"

Stuart Kinsinger

Objective: There is emerging evidence that an essential part of defining and advocating for the highest standards of professionalism includes digital and online communication as part of a professional's persona. Educators and regulators share a duty to incorporate this aspect of communication into the principles of professionalism by setting out what duties and expectations professionals have and in teaching learners aspects of risk management on the prudent use of social media. **Methods:** This presentation provides an overview of the current state of the literature this past decade on health care professionals' use and misuse of social media. All of the major health profession trade organizations, such as the American and Canadian medical and chiropractic associations, have published guidelines for members. Much congruity is seen in the literature, including respecting professional colleagues, maintaining confidentiality, respecting personal and professional boundaries, and avoiding any reference to unprofessional conduct. **Results:** Case examples are provided of professionals' misuse of social media with far reaching sequelae. Inappropriate student's communication may be of significance as was observed in the Dalhousie University's Department of Dentistry. **Conclusions:** This presentation concludes with a proactive strategy regarding "eprofessionalism." As part of the acquisition of their professional identity, health profession students should be taught not just the pitfalls of social media, but the benefits of an optimal digital presence. (This is a conference presentation abstract and not a full work that has been published.)

Learning outcomes using video in supervision and peer feedback during clinical skills training

Henrik Hein Lauridsen, Rie Castella Toftgaard, Cita Nørgård

Objective: New technology and learning principles were introduced in a clinical skills training laboratory (iLab). The intension was to move from apprenticeship to active learning principles, including peer feedback and supervision using video. The objective of this study was to evaluate student learning outcomes in a manual skills training subject using video during feedback and supervision. **Methods:** The iLab classroom was designed to fit four principles of teaching using video. Two of these principles were: (1) group work using peer-feedback on videos produced by the students and (2) video supervision of clinical skills (formative assessment). Demonstrations of these principles will be presented as video podcasts during the session. The learning outcomes of video supervision and peer-feedback were assessed in an online questionnaire survey. **Results:** Results of the supervision showed large self-evaluated learning outcome especially on key skills. Learning outcomes of peer-feedback were positive on all evaluated domains. Results will be presented during the session. **Conclusion:** The learning outcomes using video during peer-feedback and supervision are mostly favorable. Students

generally have welcomed video as a valuable learning method in skill training. To succeed using video during clinical skills training we recommend four focus areas: (1) designing an easy-to-use skills training laboratory, (2) implementation of workshops and guidance for teachers to become familiar with the technology (software and hardware) and the new teaching principles, (3) thorough information of expectations to the students in terms of using video, and (4) specific student instructions in how to give and receive feedback. (This is a conference presentation abstract and not a full work that has been published.)

Designing a clinical skills training laboratory with focus on video for better learning

Henrik Hein Lauridsen, Rie Castella Toftgaard Cita Nørgård

Objective: The principles of apprenticeship in clinical skills training are increasingly being challenged. First, most students are proficient in learning from visual multimedia and will expect this to be part of a modern university education. Second, students often will find visual teaching resources of varying quality on the internet if this is not made available during teaching. The objective of this project was to design a new clinical skills laboratory with IT and video facilities to support learning processes. **Methods:** Teaching principles were described before decisions on the design of the skills training laboratory were made. The principles included video in different instructional designs: (1) teacher-produced video podcasts, (2) group work using video, (3) formative assessment using video, (4) practicing skills using video. Each principle was described using a template focusing on objectives; feedback, activity, individualization, and relevance (the FAIR principle); description of before-under-after procedures; and requirements specifications. IT companies were invited to provide technologic solutions and make bids. **Results:** Four teaching principles were developed with specific IT requirements specifications. The meeting process with IT companies resulted in novel ideas about laboratory design consisting of "skills training islands" using iPads, AppleTVs, big screens, and a secure multimedia server. **Conclusion:** We successfully designed and implemented IT and video into a novel "easy-to-use" clinical skills laboratory based on a priori described teaching and learning designs related to active learning principles. This was a complex process involving teachers, IT experts, e-learning specialists, and a variety of university employees. (This is a conference presentation abstract and not a full work that has been published.)

Implementation of a novel interprofessional chiropractic clinical residency in the US Department of Veterans Affairs

Anthony Lisi

The use of chiropractic services in the US Department of Veterans Affairs (VA) healthcare system has expanded steadily. Among VA chiropractors, prior interprofessional training in medical settings has been shown to correlate with more successful integration in VA facilities. Since VA operates a large healthcare professional training program, a chiropractic residency pilot program was planned, developed, and launched. This paper presents a descriptive analysis of the planning and curriculum, and an interim report on program data. In planning the program, a workgroup of chiropractic subject matter experts from within VA and from the broader US chiropractic profession offered initial input. Additional expertise was provided by VA clinical educators in medical and associated health disciplines. The resulting curriculum was a full-time, 1-year clinical residency comprised of three broad content areas: supervised clinical practice in a chiropractic clinic, clinical rotations in key medical specialties and select associated health disciplines, and scholarly activities relevant to integrated clinical practice. On July 1, 2014, a 3-year pilot program was launched with one residency slot at each of five VA facilities. As of May 27, 2016, a total of 129 DCs have applied for the 15 available positions cumulatively across all application years. The applicants were graduates of 14 US chiropractic institutions. To date one group (the class of 2015) has completed the program, and each of these graduates subsequently obtained VA chiropractor appointments. Program assessments from residents and VA stakeholders have been very favorable. (This is a conference presentation abstract and not a full work that has been published.)

A cadre of EBCP educators: foundation for curricular change

Cynthia Long, Dana Lawrence, John Stites, Kevin Lyons, Christine Goertz

Objective: To describe the development of a cadre of evidenced-based clinical practice (EBCP) educators at each of 3 campuses of a chiropractic college to continue EBCP training that is sustainable through ongoing curricular growth. **Methods:** Three primary strategies used over the course of 8 years included targeted early-adopter training in small-group learning formats, an annual 2-day immersion workshop, and faculty participation in the EBCP program at McMaster University who agreed to be mentored as tutor-trainees at subsequent annual workshops. Surveys and focus groups were administered every other year, with the final survey in spring of 2016. **Results:** A total of 130 (64%) faculty and administrators participated in the annual workshop at least once, with 78 attending multiple times. Forty participated in the McMaster program, all of whom were tutor-trainees and 19 were tutors at subsequent annual workshops; 10 were presenters and small-group facilitators at an interprofessional EBCP conference for integrative health educators. Focus groups indicated that these training opportunities were key to integrating EBCP into the curricula, and that EBCP was now an accepted part of the college culture. Survey respondents also indicated in open-ended questions that sustaining the training program via formal in-person training and workshops led by the cadre of EBCP educators at each campus was important. **Conclusion:** A broad train-the-trainer model successfully developed faculty leaders in the principals, practice, and teaching of EBCP who will guide training to continue integration of EBCP into the curricula, preparing graduates to effectively practice evidence-based clinical decision-making in the emerging healthcare environment. (This is a conference presentation abstract and not a full work that has been published.)

How should we teach undergraduate chiropractic students to translate evidence to inform clinical practice?

David Newell, David Byfield

In UK educational institutions delivering chiropractic awards, the research project has been viewed as the primary vehicle for students to demonstrate that they can apply the knowledge and skills of research and evaluation. The degree criteria outline that students must be able to understand different research methods related to clinical decision making and understand the different ways in which the outcomes of research are transferred to practice when carrying out research relevant to chiropractic. The main purpose of the research project is to embed the skills required to critically appraise and judge the validity of current research evidence to inform patient care. It is becoming increasingly clear that chiropractors essentially are consumers and not necessarily doers of research, which is a specific skill set usually gained at a postgraduate masters or PhD level. The question arises, is the research project the most suitable instrument for students to fulfil these learning outcomes and provide the best method of inculcating the analytical skills to translate evidence into patient management. The authors believe that there are other educational approaches to introduce and assess these skills that are equally fit for purpose. Currently, single assessment methods are prioritized in many curricula; for example, individual primary data collection, group primary data collection, and systematic review with protocol. However, the authors believe that emphasis should be embedded throughout the curriculum at several points and with a range of formative and summative assessments to engender strong evidence informed thinking in clinical practice. (This is a conference presentation abstract and not a full work that has been published.)

Comparison of patient safety dimensions at chiropractic teaching clinics in three countries: a cross-sectional survey

Katherine Pohlman, Silvano Mior, Haymo Thiel, Anthony Tibbles, Craig Jacobs, Patrick Bodnar, Maeve O'Beirne, Martha Funabashi, Sunita Vohra

Purpose: To evaluate and compare patient safety dimensions in teaching clinics at Anglo-European College of Chiropractic (AECC), Bournemouth, United Kingdom; Canadian Memorial Chiropractic College (CMCC), Toronto, Canada; and Parker University (Parker), Dallas, TX, USA. **Methods:** The Agency for Healthcare Research and

Quality's Medical Office Survey on Patient Safety Culture was modified and used to assess 12 patient safety dimensions. All items were measured on a 5-point rating scale. All clinicians and student interns from AECC (n=149), CMCC (n=210), and Parker (n=114) were invited to participate. **Results:** Overall response rate was 53.1% (n=251/473). Four dimensions (teamwork, administrative organizational learning, clinical organizational learning, and leadership support) had a median score of 4.0 or higher as rated by clinicians or interns. The dimension of teamwork was rated highest by all respondents (range, 3.5–4.3). Overall, Parker had the largest within institution differences (range, 0.1–1.25), followed by AECC (range, 0.0–0.5), and CMCC (range, 0.0–0.3). Between institutions, work pressure and pace was the only dimension with statistically significant difference (range, 2.3–3.9) as rated by clinicians and interns. Among interns, Overall Clinical Perception (range, 2.3–3.5) and Leadership Support (range, 2.3–4.0) also had statistically significant differences. **Conclusion:** This is the first international study to assess safety dimensions in chiropractic training clinics. We found differences within and between institutions; however, most scores ranged around the mid-point. Differences are likely due to variances in local culture and/or institutional organization. Identifying and focusing training on these areas may promote and advance patient safety culture within healthcare educational institutions, something currently not well documented. (This is a conference presentation abstract and not a full work that has been published.)

POSTER PRESENTATIONS

A curricular definitional framework within chiropractic education: the concept of the academic plan

Christopher Arick

The term "curriculum" has many meanings and significances depending on the participant in higher education. Definitional connotations of curriculum range from a certain college's or program's mission and purpose, the learning experiences that the student takes away, the set of courses offered to students, to the time and credit frame in which the college provides education. Therefore, there has been a lack of a consistent definition of curriculum. A stable definition of curriculum would assist active players within a higher education institution in forming the structural dimensions of the program, policy making, and legislation. As a solution to the ambiguity of the term curriculum, the concept of the "Academic Plan" has been introduced by education researchers. Conceptualizing curriculum as an Academic Plan identifies critical decision points that will enhance the academic experience of students. Academic Plans involve the elements: purpose, content, sequence, learners, instructional processes, instructional resources, evaluation, and adjustment. Academic Plans also emphasize the sociocultural context and influences of the educational environment within the institution or program. By applying the concept of the Academic Plan to chiropractic education, active participants within a program should more easily put the students' educational needs first, progress and advance the standard of the subject matter, and work with policy makers and legislative officials to illustrate the realm of chiropractic medicine education. This study offers a deeper understanding of the concept of Academic Plan and how it may benefit chiropractic medicine programs. (This is a conference presentation abstract and not a full work that has been published.)

Assessing the literacy of modern chiropractic students: OMG!

Brian Budgell, Neil Millar, Keith Fuller

Objective: the objective of this study was to develop, validate, and implement an instrument to assess the literacy of freshman chiropractic students. **Methods:** Corpora of the biomedical and health literature, including the literature of chiropractic, were analyzed to determine the key words and phrases that were associated with chiropractic writings, based on statistically significant overrepresentation in comparison with a reference corpus of general English. Key words and phrases were incorporated into test questions that were piloted with student populations in Asia, Australia, Canada, and France. The assessment was piloted online and as a paper test. Item responses were analyzed to eliminate questions that were insensitive, and comparisons across cohorts were used to establish reliability. With one cohort, performance on the literacy assessment also was correlated with performance in the first year of the chiropractic curriculum. **Results:** The assessment instrument demonstrated internal validity with chiropractic cohorts. Scores achieved by native English speaking cohorts and nonnative English cohorts of chiropractic students were congruent with scores achieved by similar cohorts in nonchiropractic programs. Performance on the test, administered at admission, showed some correlation with academic performance in the first year of study, with correlation coefficients varying depending upon the nature of the course (e.g., primarily didactic versus motor skills courses). **Conclusion:** The assessment instrument reliably distinguishes between native and nonnative speakers of English, cohorts in programs offered in English versus other languages, and between health disciplines within single languages. Performance on the assessment has some predictive value relative to overall academic performance. (This is a conference presentation abstract and not a full work that has been published.)

Identifying, selecting, and training opinion leaders to promote the use of best practices

André Bussières, Michele Maiers, Diane Grondin, Simon Brockhusen, Darquise Lafrenière, Heather Owens

Aim: To describe the process for identifying, selecting, and training opinion leaders (OLs) to increase the uptake of evidence-informed practice (EIP) and clinical practice guidelines (CPGs) within the chiropractic profession in Canada. **Methods:** Selection took place in two waves. Phase 1: OLs were identified through peer nomination using a cross-sectional survey administered among leaders of chiropractic associations and regulators in Canada. A 10-member committee screened the list of nominees. The two to three top-ranked nominees per province were selected by consensus, and invited to attend a training workshop. Phase 2: A national online survey was administered to 7200 Canadian chiropractors. Recommended names were screened individually by OLs in each province. Highest-rated candidates were short listed. Final selection was made by consensus. **Results:** Phase 1: A total of 21 OLs selected among 80 nominees attended a 1-day training workshop on four essential activities of the implementation process (engaging, planning, reflecting, executing, and evaluating). Phase 2: A total of 486 chiropractors recommended 1126 names as potential OLs. After screening, 110 of 133 new candidates accepted our invitation to participate. Teleconferences took place highlighting roles and ways of engaging with peers to facilitate guidelines dissemination. Online learning resources and tools were developed to support OLs in their new role. **Conclusion:** Selecting and training opinion leaders may be an effective strategy to improve understanding of the value of EIP and CPGs among chiropractors, and sensitize policymakers to the role of chiropractors as primary care practitioners. (This is a conference presentation abstract and not a full work that has been published.)

A study to investigate different approaches to learning in chiropractic students at the Welsh Institute of Chiropractic

David Byfield, William Wong Ling Huei

Objectives: A "learning style" can be described as the way in which a person learns and absorb new information and skills. Understanding the preferred learning style may help the learner to process, incorporate, and accumulate new information and skills and assist curriculum design and delivery. The aim of this study was to initiate a study to begin to investigate how chiropractic students approach their learning and identify whether they employ deep or surface styles during their study at the Welsh Institute of Chiropractic. **Methods:** Students enrolled in years 1 to 4 of the degree program were recruited for this study. They were requested to complete the Revised 20 question Study Process Questionnaire (R-SPQ-2F). Students were instructed to respond to the questionnaire based upon an overall view of their approach to their learning in their academic year and not individual modules. **Results:** We recruited 35 students from each of the four academic years for a total of 140 students. There was no significant difference in learning styles between the academic years or between male and female students. Students in all academic years

demonstrated a predominantly deep strategic approach to their learning. **Conclusions:** This study established that chiropractic students use mixture of deep and surface learning styles. The study also demonstrated that the questionnaire is fit for this purpose for a health professional degree program. This information could assist academic teams during curriculum review to amend content, delivery mode, and assessment strategy to encourage a greater proportion of deep learning characteristics related to chiropractic education. (This is a conference presentation abstract and not a full work that has been published.)

Comparison of practical skills of full-time and part-time students in undergraduate chiropractic education

Beverley Crone, Adrian Hunnisett, Christina Cunliffe

Objective: Of the 3 chiropractic colleges in the United Kingdom, only one offers full-time (FT) and part-time (PT) chiropractic degree courses. This study investigates potential differences in practical skill attainment of students on a PT course compared to the traditional FT course. **Method:** Following ethical approval, a two-part study was undertaken: (1) self-administered questionnaires to students and tutors, and (2) retrospective analysis of practical examination outcome data. The questionnaires sought information about student choices, performance, and teaching modes between FT and PT delivery in relation to practical development. Outcomes were compared against retrospective practical examination data between the 2 groups of students. **Results:** Despite demographic differences in the student groups, the survey suggested there were no perceived differences between the 2 modes of delivery. However, PT students reported a struggle to manage the time commitment for continual development of psychomotor skills to maintain their technique proficiency compared to FT students. The analysis of the practical examination results reflected the survey findings, demonstrating no significant statistical difference between the two pathways. Both courses showed a significant annual reduction in absolute marks from Yr1 to the final year ($p = .05$ FT and $p = .032$ PT), although all groups reached, and exceeded, competency requirements. **Conclusion:** The study indicated a differences in demographics and commitments of the students on the two courses, but no significant difference in the practical skills outcomes. The decline in achievement scores in both courses may reflect increasing academic level and demands, but warrants further examination. (This is a conference presentation abstract and not a full work that has been published.)

Implementing research culture in a chiropractic curriculum

Ricardo Fujikawa, Alma Vázquez, Camino García-Balboa, Francisco José Germain, Arantxa Ortega-De Mues

Fomenting a research culture in chiropractic education is a matter of necessity in a world of health care that exceedingly demands evidence-based practice (EBP). Research in chiropractic is growing, and the biggest challenge is to translate the knowledge acquired from that research into clinical practice. To prepare students to face the challenges of clinical practice, the authors propose a model that targets increased student participation in research projects throughout the program. The purpose of this model is to increase student skills and knowledge in relation to EBP. Different courses throughout the program help to develop appreciation of data derived from research, as well as provide students with the skills to understand the scientific method. Starting in Year 1, students begin with research projects developed by their peers from the last year of the program, and transform the written projects into poster format. In Year 2, courses focus on teaching students how to access and index scientific literature to develop critical reading and reasoning. In Year 3, students compile information and learn to develop studies based on established methodology. Students at Year 4 prepare the research question, the hypothesis to be tested, and the appropriate study design. In the final year, candidates develop the research project by analyzing the collected data and applying the acquired knowledge. Finally, poster presentations, and preliminary and final projects are presented during Research week, an academic event that includes a tribunal that evaluates the merits of the projects presented. (This is a conference presentation abstract and not a full work that has been published.)

Comparison of academic outcome of chiropractic students on full-time and part-time chiropractic degree courses

Adrian Hunnisett, Christina Cunliffe

Objective: The nature, structure and teaching of chiropractic programs offered at chiropractic schools varies considerably. Regardless of how the education is delivered, training is the equivalent of 4 years of full-time education. In the United Kingdom, only 1 of the 3 chiropractic colleges offers 4-year full-time (FT) and 5-year part-time (PT) courses. This study investigates whether there are potential outcome differences between PT and FT students. **Method:** Following ethical approval, a retrospective analysis of student achievement data was undertaken. The records of 250 chiropractic students studying between 2010 and 2015 were examined and year-by-year achievement noted according to mode of delivery and year of course. Comparisons of annual average attainment were made between the FT and PT courses. No differentiation was made between practical and academic modules in this particular study. **Results:** Both courses showed significant increases in achievement over the duration of the course ($p = .011$ FT; $p = .007$ PT), with continual improvement year on year. There was a slight, but insignificant dip in the PT course at Year 4 but this was redressed during the final year and warrants further exploration. There was no difference in high level achievement between the 2 courses, with approximately 1 in 5 students gaining first class honors classification in both courses. **Conclusion:** This study shows that, based only on overall achievement, there is no difference in either FT or PT training for chiropractic. This enables a greater number of students to consider chiropractic as a career choice while managing other commitments. (This is a conference presentation abstract and not a full work that has been published.)

Use of digital imaging in chiropractic education and practice in the United States

John K Hyland, Margaret A Seron

Objective: Improvements in technology for imaging the human body are continuous. In the chiropractic profession, digital radiographic imaging of the skeleton has become more economically feasible and practical, and is beginning to replace film-based radiography. Chiropractic educational institutions and private chiropractic practices in the United States are increasingly using digital radiography. The National Board of Chiropractic Examiners (NBCE) must keep its examinations for US licensure current, appropriate, and valid. **Methods:** In 2014, Margaret Seron surveyed radiology faculty to determine the extent of use of digital imaging in chiropractic educational institutions (DCPs). She obtained responses from 13 institutions. **Results:** A total of 12 schools (92%) used digital imaging in their patient clinics, and a large majority (76%) used digital radiographic images for teaching and testing their students at least half of the time. In the Practice Analysis of Chiropractic 2015, the NBCE reported the results of its 2014 and 2009 surveys of US doctors of chiropractic (DCs). In 2014, half of practicing DCs (50.1%) reported having their own radiographic equipment; the percentage was 59.4% in 2009. The portion of chiropractors with radiographic equipment who use digital imaging has more than doubled in 5 years – from 11.6% in 2009 to 28.1% in 2014. **Conclusion:** The use of digital imaging of the human skeleton is growing in chiropractic education and practice in the United States. The NBCE currently is conducting a feasibility study to investigate incorporating the interpretation of digital images into its Part IV practical examination of chiropractors for licensing in the United States. (This is a conference presentation abstract and not a full work that has been published.)

Student retention: using a survey instrument to identify the at-risk student

John Mrozek

Early identification of the at-risk student and improved student retention, through early academic support and assistance, is integral to the goal of student success leading to program completion and graduation. The implications of identifying and supporting the at-risk student as early as possible are far reaching, as students who struggle academically have difficulty with licensing examinations and with clinical competence following graduation. Research in health professions education has shown that early determination of a student's

remediation needs is an essential first step in preventing academic failure with individual course performance a strong predictor of overall student performance and retention. The Personal Background and Preparation Survey (PBPS) is a validated, copyrighted, 98-item instrument, focused on noncognitive and cognitive risks, and designed to be diagnostic and prescriptive with regard to early identification of the at-risk student. It has been shown to consistently identify health professional students at risk early in their academic programs. There are 10 PBPS risk categories and associated scores resulting in a total risk score for each student. Using the total risk score, students are assigned to one of three levels, namely high, medium, or low risk. The PBPS total risk score is associated with an academic outcome code assigned at the end of the academic term. Research shows a strong correlation between the PBPS risk level and academic performance in health professions education. The purpose of this presentation is to describe the at-risk student, PBPS categories, academic status codes, and administration of the survey and codes. (This is a conference presentation abstract and not a full work that has been published.)

The future role and identity of the chiropractic profession as envisaged by European chiropractic students

Dave Newell, David Byfield, David Sentker, John Schenk, Matt Hetlevik, Eric Knutsen, Gary Weis, Eric Tassi

Introduction: The chiropractic profession has had a history of internal debate concerning the importance of historical definitions, explanatory theories, and descriptive language by which it describes itself. Recent efforts to explore these ideas in North America and Canada have suggested cognitive dissonance concerning some of these perceptions. We undertook to explore similar issues among chiropractic students in Europe. **Method:** A modified survey tailored for European students was disseminated via a web- or paper-based survey to 11 European institutions delivering chiropractic programs. **Results:** A total of 848 students across Europe responded with nine of the 11 institutions providing data. Generally concerning issues of terminology and tradition, the majority of students felt these were important to retain as a description of clinical practice while a similar proportion also wanted to be integrated into mainstream healthcare and retain a primary care status suggesting similar dissonance in aspirations as found in previous studies. However, these responses were markedly different where students were educated in close proximity to medicine. **Discussion:** Students have views concerning the future role and identity of the profession that both desire to uphold tradition while aspiring to mainstream healthcare status and recognition. This dissonance is not apparent when chiropractic students are taught in proximity to medicine. This may imply that lack of exposure to the wider healthcare world at undergraduate level fosters the maintenance of unrealistic views concerning the acceptance of traditional chiropractic ideas in mainstream healthcare. Reducing professional isolation presents an ongoing and key challenge for the chiropractic profession. (This is a conference presentation abstract and not a full work that has been published.)

Impact of a journal club on doctor of chiropractic student attitudes, knowledge, and critical appraisal skills

Mark Pfefer, Jon Wilson

Objective: Critical appraisal of scientific literature and incorporation of health care informatics into patient care are important parts of the doctor of chiropractic program (DCP). Journal clubs are a commonly used educational approach for teaching and development of evidence-based practice skills and critical appraisal skills. The purpose of this study was to survey DCP students' attitudes, knowledge, and critical appraisal skills among those who regularly attended an ongoing journal club. **Methods:** A pen and paper survey was developed and delivered to journal club participants who had attended at least three sessions within the prior 6 months. Results were entered into SPSS version 22. Descriptive statistics were calculated. The survey was reviewed and determined to be exempt by the University Institutional Review Board (IRB). **Results:** Nine percent of the total number of DCP students attended a voluntary journal club over a 6-month period. A total of 18 students who attended at least three sessions completed the survey. A majority of respondents (89%) held positive attitudes toward evidence-based practice (EBP) and a majority (92%) reported that attendance at a journal club improved critical appraisal skills. A majority of respondents (83%) scored greater than 80% on EBP knowledge-based questions including issues related to sensitivity, specificity, p values, and likelihood ratios. **Conclusion:** Journal clubs can be an effective way to influence evidence-based practice skills for DCP students. Strategies are needed to encourage additional students to attend. Future research is needed to determine if journal club attendance impacts patient care and promotes lifelong learning. (This is a conference presentation abstract and not a full work that has been published.)

An analysis of the clinical encounters of interns at the Canadian Memorial Chiropractic College

Aaron Puhl, Christine Reinhart, Stephen Injeyan, Anthony Tibbles

Objective: The objective of this study was to describe the case mix experienced by chiropractic students during their 1-year clinical internships at a Canadian chiropractic college. Secondary objectives were to describe the frequency of plain-film imaging and the composition of treatment recommendations. **Methods:** A prospective, observational study was conducted using a convenience sample of 24 chiropractic interns. Data were collected by interns using a standardized form, completed for each new patient and each new complaint examined during the 1-year internship. Standardized forms collected data regarding patient demographics, complaint characteristics, and treatment recommendations. **Results:** Data were included for 23 of 24 participating interns, who described 828 patients and a total of 948 unique complaint presentations. Overall, 60% of patients were female, 86% were aged 18 to 64 years old, and 23% were naive to chiropractic care. Of all presenting complaints, 93% were pain-based, 67% were chronic, 65% included spinal complaints, and 7% presented with red flags; individual interns' experiences were variable and are described. Plain-film imaging was ordered for 14% of complaint presentations. On average, treatment recommendations called for 9.4 visits and often included multimodal treatment approaches, most commonly soft-tissue therapies (91%), home-based active care (84%), and spine manipulation (70%). **Conclusions:** This study adds to the few that detail the characteristics of patients attending chiropractic teaching clinics; it is the first to describe average case loads of chiropractic interns. These data are important to assess the comprehensiveness of learning opportunities provided to chiropractic students during their clinical internships. (This is a conference presentation abstract and not a full work that has been published.)

Councils on Chiropractic Education International (CCEI): developing an international framework for chiropractic education and accreditation

Michael Shobbrook, C. Lesley Biggs, Kylie Woolcock

Background: The development of accreditation standards and assessment of programs against them is an important quality assurance and quality improvement mechanism, ensuring competent graduates with the knowledge, skills, and attributes to practice in a health profession. The CCEI recognizes the need for internationally accepted accreditation standards to, among other things, enhance international portability of educational credentials. **Objective:** To develop a contemporary international framework for chiropractic education and accreditation that can be used to demonstrate equivalent, appropriate program standards, competencies, and accreditation policies and procedures used by CCEI member agencies. **Methods:** Over 3 years, CCEI has undertaken a major revision of its standards, involving: (1) Line by line mapping – CCEI member agencies' program standards, competencies, and accreditation policies and procedures were compared using qualitative research software NVivo. Each document was coded into nine major themes and over 100 subthemes. Once coded, a draft framework was created based on a comparison of each of these codes. (2) Consensus development – the draft framework was reviewed and refined through workshopping by participants from the four CCEI member agencies at the time. (3) Consultation process – it was circulated first to member agencies, then more broadly to stakeholders, for feedback. A Steering Committee with representatives from the four CCEI member agencies at the time oversaw the process. **Results:** The resulting document, The International Framework for Chiropractic Education and Accreditation – Program Standards, Competencies, and Accreditation Policies and

Procedures, is due for release during 2016. **Conclusion:** To maintain membership of CCEI, member agencies adhere to the framework as a minimum benchmark for their accreditation processes and decisions, providing assurance of international educational quality and equivalence across member agency programs. (This is a conference presentation abstract and not a full work that has been published.)

Work disability prevention graduate program: extending the chiropractor's reach

Paula Stern, Silvano Mior, Pierre Cote, Robert Weaver, Patrick Losiel

Rationale: The Canadian estimated burden of workplace injuries and disability is $19 billion annually. Reducing this burden is challenging because work disability is multifaceted extending beyond diseases and medical diagnoses. Work disability results from complex interactions between a worker and their environment. Managing work disability requires a multidisciplinary approach extending beyond the traditional biomedical model. Few programs train professionals within the biopsychosocial framework needed to prevent and manage work disability. Evidence suggests such programs should include workplace interventions and return to work (RTW) coordination. **Innovation:** We developed a unique collaborative University (UOIT) – Chiropractic College (CMCC) Graduate Diploma program in Work Disability. It is an online, part-time professional graduate-level program designed for chiropractors and regulated health professionals. The program is based on graduate competencies derived from research and practical best evidence. The student learns the intricate interplay between the worker, employer, union, insurer, and various healthcare providers as they navigate the legal, regulatory, and health care systems. Students implement this knowledge in their community work-based practicum. The online delivery also aids in building a community of experts by enabling them to share their learned experiences. **Potential Impact:** Graduates from the program become RTW coordinators who will have a vital role in preventing and managing work disability. For chiropractors, this will enhance clinical practice by providing an additional dimension to their usual practice. **Conclusion:** Developing a graduate program based upon current best evidence together with direct workplace application will provide chiropractors with training to influence system-wide change. (This is a conference presentation abstract and not a full work that has been published.)

Assessing attitude of patient-centered care among students at a Canadian chiropractic college: a study protocol

Kent Stuber, Silvano Mior

Introduction: Patient-centeredness is a key component of the doctor-patient relationship. Health care educators must work with students to foster patient-centered attitudes and behaviors. Student attitudes of patient-centered care have been assessed in various health care professions but not in chiropractic. **Purpose:** To assess the attitudes of students in a Canadian chiropractic educational program towards patient-centered care, and if such attitudes differ by year of study. **Design:** Cross-sectional online survey. **Population:** All students attending a Canadian chiropractic college. **Primary outcome:** The Patient Practitioner Orientation Scale (PPOS) is an 18-item validated instrument assessing patient-centered attitudes related to the doctor-patient relationship. Scores range between one and six, where lower scores suggest a more doctor- or disease-centered approach, while higher scores indicate a more patient-centered approach. **Method:** Prenotification of the survey will be sent to all students using internal student e-mail addresses. This will be followed by four rounds of survey distribution. Upon completion of an informed consent process, participants will be asked to complete the survey, including basic demographic questions and the PPOS. **Analysis:** Demographic data will be reported using descriptive statistics. An analysis of variance will be used to examine the differences between demographic variables and average PPOS scores by year of study. Demographic variables found to have significant interactions with PPOS scores will be entered into a multilinear regression analysis to determine which variables are predictive of PPOS scores. Ethics approval will be sought from the local Research Ethics Board before commencing the study. (This is a conference presentation abstract and not a full work that has been published.)

Students helping students: peer-coaches practicing leadership skills for student success

Noni Threinen, Samaneh Sadri, Teresa Shallow

Objective: Educating students to be confident and effective leaders in situations ranging from patient education, interprofessional activities, legislative influence, and community service is essential for future practitioners in integrative healthcare environments. **Methods:** Academic administration, academic support staff, and student representatives collaboratively designed the Peer-Coach program, including 4 hours of coach training in leadership, professionalism, and communication. Each coach met with a group of incoming students during orientation and multiple sessions in the first term Professional Student Seminar to lead activities, discussion, and reflection on interprofessionalism, study, and self-care skills and ethical practice. Participants completed confidential feedback surveys. Students gave oral presentations of their final group projects and lead instructors assessed the achievement of student learning objectives. **Results:** Survey responses were analyzed for common themes. Of 46 participants, the majority agreed that the program offered: (1) encouragement, (2) time management and goal setting skills, (3) value and effectiveness of the learning experience, and (4) improved attitudes toward their education and career goals. Final group projects met or exceeded expected levels of performance. **Conclusion:** Peer coaches and incoming students experienced learning activities in an IPE setting and achieved learning objectives in alignment with Course, Program, and University Learning Outcomes. The program subsequently was formalized within the Professional Student Seminar and two upper level elective courses that include advanced training in communication, leadership, professionalism and ethics, critical thinking, and problem solving. (This is a conference presentation abstract and not a full work that has been published.)

Chiropractic curriculum mapping and congruence between evidence for workplace factors in workers with neck pain

Peter Tuchin, Martin Frutiger

Background: Mechanical neck pain (MNP) is a common but costly multidimensional health issue. Many workplace health promotion interventions (WHPI) for MNP exist in the literature. Chiropractors should have good knowledge of WHPI for MNP. However, the congruence between knowledge of WHPI risk factors for MNP and chiropractic program curricula (CPC) is yet to be appraised critically. **Objectives:** To determine the congruence between knowledge of WHPI for work-related MNP in the chiropractic program at Macquarie University (MU). **Methods:** A literature review was undertaken to determine risk factors (RF) and WHPI for work-related MNP. We searched Cochrane Library, PubMed, EMBASE, CINAHL, MANTIS, and PEDro (from 1991–2016). To investigate curriculum mapping, we searched the ERIC and A+ Education databases. The two then were compared and analyzed. **Results:** Education on RF for MNP in the CPC was extensive and demonstrated good congruence to published literature. Although, less information was covered on work-related MNP specifically, education on effective WHPI for MNP varied in the CPC. Education on relaxation breaks and body function (e.g., body posture, training programs, neck muscle strengthening, and endurance training) was adequately congruent. However, mental health and body function education (e.g., psychologic stress coping strategies), and activity performance and physical modifications (e.g., workstation and ergonomic modifications) were not adequately congruent to concepts in the literature. Overall, the proportion of time allocated to theory versus skills acquisition was not adequately balanced. **Conclusions:** There is adequate congruence between the CPC at MU and the published literature on RF and some WHPI (relaxation breaks and body function). However, there is inadequate congruence for WHPI focusing on mental health and body function education, and activity performance, and physical modifications for work-related MNP. The proportion of time allocated to theory versus skill acquisition for

these WHPI also was inadequate. (This is a conference presentation abstract and not a full work that has been published.)

Mental health knowledge in a final year chiropractic cohort: implications for learning and teaching

Stephney Whillier, Madeleine Ferrari

Objective: Chiropractors are primary health care providers, and must be able to recognize possible mental illness in patients. Adequate knowledge of mental health issues improves rates of referral to appropriate mental health services, creates a better understanding of the biopsychosocial aspects of the condition, and facilitates interdisciplinary management. This study investigated the mental health knowledge and misconceptions of final year chiropractic students. **Methods:** Ethics approval was obtained from Macquarie University HREC (reference number 5201500120). A total of 89 students completed an online questionnaire assessing mental health knowledge, myths and misconceptions, the value of such knowledge for practicing chiropractors, and demographic information. **Results:** Student knowledge of the primary symptoms for depression and schizophrenia was competent, similar to community samples. However, a high false-positive response tendency suggested students were less competent at mental health differential diagnosis. A high number of common myths and misconceptions about mental health also were endorsed, particularly in relation to depression, anxiety, and suicide. Age and value of such knowledge seemed to predict greater mental health literacy. **Conclusions:** The present study offers direction for the chiropractic teaching program at Macquarie University. In addition to a need for increased content-based education, mental health literacy may improve through targeting the student's perceived value of the information for chiropractors, and combating common myths and misconceptions. Future research could evaluate the incremental value of teaching and program modifications, and assess subsequent behavioral responses, such as the student's confidence in managing patients with mental health concerns, and knowing when to refer on. (This is a conference presentation abstract and not a full work that has been published.)

A survey of electronic device ownership by students in a doctor of chiropractic program

Jon Wilson, Mark Pfefer

Objective: Chiropractic programs are evolving constantly to adapt to the technology needs of students and to leverage the affordances offered by new technology. Developing a technology plan is an important goal for an institution, and this plan should be informed by the current state of student technology use. The objective of this study is to determine the types of personal electronic devices that students currently own and the number of wireless connected devices that students carry daily. **Methods:** An electronic survey was developed and delivered using the Qualtrics survey platform. A survey link was delivered to all currently enrolled students at the University by e-mail. Results were exported from Qualtrics into SPSS version 22. Descriptive statistics were calculated. This survey was determined to be exempt by the university Institutional Review Board (IRB). **Results:** The response rate for the survey was 34.2%. The types of devices owned by students in order of prevalence were smartphone, laptop, tablet, fitness tracker, desktop computer, and smartwatch. Although Windows desktop computers were more prevalent than Macs, the Apple family of products was owned more often than any other brand in smartphones, laptops, and tablets. Most students (62%) carried two wireless connected devices on a daily basis, with an equal amount of students (17%) carrying one or three devices. **Conclusion:** Knowledge of student preference for device type and brand is important when planning future implementation of technology. Planning for future wireless needs at an institution can be better informed by understanding current student usage of wireless connected devices. (This is a conference presentation abstract and not a full work that has been published.)

INNOVATION SESSIONS

Introduction of a standardized approach to spine-related disorders in an integrated college outpatient clinic

Jacqueline Beres

Back and neck pain are the first and fourth leading cause of disability in the world. In the United States, health care costs continue to escalate without a corresponding rise in improved outcomes. Wide variation exists among management strategies for these conditions, contributing to this effect. Improvements in value have been associated with adherence to evidence-based guidelines. The concept of the primary spine practitioner (PSP) was developed based on current evidence to reduce disparity and implement a systematic algorithmic approach to the diagnosis and management of spine-related disorders using the Clinical Reasoning In Spine Pain (CRISP) protocol. Chiropractors are uniquely suited to serve in the role of PSP. **Objective:** To provide a descriptive report of the curriculum included in a program offered at Southern California University of Health Sciences. The overarching goal of the program is to develop clinical competency in PSP concepts using the CRISP model. Training is provided via four different means: (1) faculty training/development, (2) student clinic, small group training (focused exposure), (3) private clinical rotation, one-on-one training (residency), and (4) periodic classroom lecture with live demonstration and workshop, clinic preparatory. Topics covered and objectives achieved in each setting will be presented. The program at SCUHS provides an example of how CRISP is being introduced with the intent to standardize clinical procedures for spine pain in an integrated college outpatient clinic. A standardized training program focusing on evidence-based assessment and diagnosis may lead to more effective/efficient treatment decisions resulting in improved outcomes, reduced healthcare costs, and greater patient satisfaction. (This is a conference presentation abstract and not a full work that has been published.)

The educational, professional and interdisciplinary impact of an evidence-based practice (EBP) curriculum coordinator

Shireesh Bhalerao, Ronald LeFebvre, Mitchell Haas

Rationale: To improve patient outcomes and the cost-effectiveness of health services, there is an imminent need and obligation among academic and other health care institutions to create, support and sustain an evidence-based practice (EBP) infrastructure. **Innovation:** To help achieve key specific aims of National Institutes of Health R-25 grants awarded to the University of Western States (UWS), an EBP Curriculum Committee (EBPCC) was formed that included four faculty members, a librarian, and a member of the Department of Research. Upon conclusion of the funding period, a former member of the EBPCC (a full-time faculty member) was designated as the UWS EBP Coordinator. This innovative position was formalized to maintain and advance said infrastructure with the hope of improving patient outcomes and/or promoting cost-effective delivery of chiropractic and other health care services. **Potential Impact:** With formalization of the position, the UWS EBP Coordinator promotes and supports faculty development in EBP knowledge, understanding and teaching; coordinates existing EBP curricular process and change among faculty; coordinates existing EBP curricular process and change between faculty and UWS administration; manages past and current EBP products; leads in the dissemination of EBP products among and between other academic institutions thereby promoting interinstitutional collaboration; provides an engine for faculty scholarship; and underscores a core theme of UWS to strive to be at the forefront of EBP within the chiropractic profession and local community. Now having an EBP Coordinator, UWS serves as a model of success for other like-minded health care institutions. (This is a conference presentation abstract and not a full work that has been published.)

Facilitating communicative competence among learners whose first language is not English

Brian Budgell

Rationale: Within health care, communicative competence is the key to effective education, research and professional practice. In fact, within this domain an international lingua franca, biomedical English,

has developed. Biomedical English is the medium of chiropractic education in English-speaking countries, and is widely used in countries where English is not an official language. Hence, currently a substantial minority of chiropractic students in English-speaking countries and elsewhere are laboring to master what is essentially a second language. University level communicative competence in English generally is regarded as requiring a vocabulary of approximately 20,000 words – a daunting threshold. However, studies show that functional fluency within a single subdomain of the health sciences requires only mastery of the General Service List (GSL; the 2000 most common words in the English language), the Academic Word List (AWL; the approximately 570 word families commonly encountered in postsecondary education), and the keywords of the specific subdomain. **Innovation:** Thus, the essential language of chiropractic has been identified by computerized analyses of corpora of the chiropractic literature, yielding a target lexicon of approximately 2500 key words and phrases to supplement the GSL and AWL. These words and phrases have been incorporated into autonomous and responsive learning modules that are available whenever and wherever the learner has an internet connection. **Potential Impact:** The targeting of language learning to the essential lexicon of a health profession substantially reduces the learning burden and, therefore, likely increases success in learning and professional practice. (This is a conference presentation abstract and not a full work that has been published.)

A framework to start new chiropractic programs in countries where there is none

Ricardo Fujikawa, Carlos Gevers Montoro

It is widely known that the majority of countries in the world do not have chiropractic services available for the local population. Also, in countries where there are chiropractors, it is common to see the profession underrepresented, being established by a small number of professionals who do not represent a critical mass in matters of legal regulation and contribution to the national health system. It also is known that the way of guaranteeing the survival and growth of the profession is to have an education program training professionals locally. In approaching this problem, several possibilities can be applied depending on the resources available. The authors propose a general framework leading to the establishment of a cohort of professionals from what is known as a "conversion program" within an established university, followed by the establishment of a full-qualifying program. The framework also considers the structure necessary to generate human resources for a future student clinic as well as economic means to make it feasible for universities to invest in the new career as well as strategies in drafting the curriculum to be used. Finally, the framework also assesses areas of risk and threats based on its previous application in some countries. (This is a conference presentation abstract and not a full work that has been published.)

Master in Chiropractic Medicine: an innovative curriculum challenges and solutions

B. Kim Humphreys

The first cohort of students started the Master in Chiropractic Medicine (M Chiro Med) program in the Medical Faculty at the University of Zürich in 2008. As a completely new curriculum designed to integrate chiropractic within medicine, numerous challenges were experienced. The following represent the most significant challenges. All medical students (including chiropractic) must pass at a high level the Medical Entrance Test – a grueling 9-hour aptitude test of learning, application, and recall of vast amounts of information under pressure. Only 25% of applicants pass successfully. Consequently, a pool of approximately 100 applicants is necessary for the M Chiro Med program to enroll its allocated 20 places. This has led to a coordinated effort by the Chiropractic Association, University, Medical School, and Chiropractic Medicine program to ensure enough prospective students take the MET each year. The 6-year M Chiro Med curriculum requires 4 complete years of medical courses in addition to chiropractic courses. The solution was to develop chiropractic courses highly integrated with medicine with less contact hours. Research activity and output are high priorities for the university and medical school. Thus, a 10-year strategic and operational research plan with 2 research pillars (Clinical Outcome Studies, Brain/pain/fMRI research) were quickly developed. Successful grant applications from several internal and external sources were obtained facilitating hiring researchers and funding projects that resulted in numerous publications. Integration with medicine provides tremendous research opportunities; however, the ongoing challenge is developing a sufficient number of future chiropractic researchers. (This is a conference presentation abstract and not a full work that has been published.)

Development of a knowledge translation site to enhance curricular and course development

Craig Jacobs, Anthony Tibbles, Vince Ricciardi, Lenore Edmunds

There currently is a delay in the incorporation of new evidence into course content and the curriculum. This is a challenge for all healthcare educational institutions. The Canadian Memorial Chiropractic College is in the process of developing a Knowledge Translation (KT) Site. The site will be a resource to provide current best evidence and knowledge. The site will be overseen by a Central Review Committee (CRC) which is a gatekeeper for the information that will be placed on the KT site. The Central Review Committee will identify a topic subgroup to appraise and synthesize the most recent evidence and create a report. A Critical Appraisal Committee ensures the report reflects the evidence accurately. Once reviewed, the CRC votes to include the report on the KT site. As new evidence has been place on the site, all instructors at CMCC will incorporate this material into their courses. Chairs of departments will work with instructors to ensure this takes place. Two additional committees, an Outcomes Committee and a Knowledge Translation Committee, will work to ensure that new material from the KT site is incorporated by faculty into coursework and the curriculum using a multitude of formats and strategies. The goals of the KT site are to provide easy access to the most up-to-date relevant and valid clinical information, promote consistency among instructors and courses, inform course content and development, inform curriculum development, and enhance ongoing evidence-based care. A research study is being developed to explore the KT site effectiveness. (This is a conference presentation abstract and not a full work that has been published.)

Enhancing trans inclusivity and awareness in Canadian Memorial Chiropractic College clinics

Craig Jacobs, Elizabeth Lewis

Transgender people often face transphobia and discrimination in society. Many transgender patients have experienced transphobia in healthcare settings. Past negative experiences with healthcare providers may cause a transgender patient to avoid or delay seeking healthcare. In addition, transgender patients may choose not to share personal information due to previous negative responses from healthcare providers. This can lead to poorer quality of care. The Canadian Memorial Chiropractic College has a clinic within Sherbourne Health Centre in Toronto, Ontario. Sherbourne Health Centre provides care to the underserved communities in the area including: Newcomers to Canada; Homeless and Under-Housed People; and Lesbian, Gay, Bisexual, Trans, and Queer People. The clinic management team at CMCC has worked with Rainbow Health Ontario at Sherbourne Health Centre to modify our intake forms to ensure inclusivity and comfort to our transgender patients. Sections have been added for the patient's preferred name if this differs from their legal name. Additionally, a two-step approach on the form for sex "as per OHIP" as well as current gender identity has been added. Identifying transgender people can be challenging. Using gender alone is not enough because some people in this community do not self-identify as transgender. Using the two-step approach will allow all patients to feel comfortable. Additionally, this will allow clinicians and interns to address the patient and provide them with appropriate care. We have developed an e-module to raise awareness for interns and clinicians regarding these changes. Interns at our Sherbourne Health Centre clinic are trained in transgender issues. (This is a conference presentation abstract and not a full work that has been published.)

An innovative strategy to facilitate the acquisition of a student's digital presence as part of their professional identity formation

Stuart Kinsinger

Rationale: There is emerging evidence that an essential part of defining and advocating for the highest standards of professionalism includes digital and online communication as part of a professional's persona. Incoming health profession learners have been raised in a postmodern societal culture that has embraced some values antithetical to the principles of professionalism. Educators and regulators share a responsibility to incorporate online communication into the principles of professionalism by setting out what duties and expectations professionals have, and in teaching learners aspects of risk management on the prudent use of social media. **Innovation:** Incoming students are placed in small groups and tasked with creating and developing a digital profile within a framework of the principles of professionalism. Each student creates a social media platform and undergoes peer evaluation to ensure their profile is congruent with professionalism values, with this proactive approach contrasting to a reactive response and potential discipline when online professionalism breaches are brought to light. **Potential Impact:** Students undergo a transformative experience as they acquire their own professional identity within their profession's norms. Educators act as role models and mentors in this process. This innovative task advocates for a proactive strategy rather than a reactive approach to a young adult's online profile, rising above the potential pitfalls of social media, to facilitate an optimal professional digital presence. (This is a conference presentation abstract and not a full work that has been published.)

Building clinical reasoning skills through case-based learning in radiology rotation

Celia Maguire

Rationale: It is important for the chiropractic student to transfer knowledge gained in a myriad of courses into clinical skills. Through case-based learning, students are able to practice critical thinking skills in a clinical learning environment as an intermediate step between the lecture hall and a clinical internship or independent practice. **Innovation:** Radiology rotation provides students experience using the tools in a PACS system to analyze diagnostic imaging of chiropractic patients with diagnoses found in the test plan for national board exams. The process is loosely based on the seven jump process of problem-based learning where the radiologist acts as a tutor. The radiologist is able to model discipline-specific behavior and to direct students to appropriate resources. The students have the authentic experience of report writing and receive feedback on their work through rubrics provided in advance. Discussion after the reports are graded allows the group to explore management possibilities. Clinical reasoning skills are developed through the process of wrestling with chiropractic cases as unknowns, communicating radiographic indications, analyzing findings, formulating impressions and recommendations, and then reflecting on the cases as a group with a radiologist after the reports are graded. **Potential Impact:** Experience disciplinary thinking, provide students an insight into the role of radiologist, authentic assessment. (This is a conference presentation abstract and not a full work that has been published.)

Are you ready? Anticipating (and improving!) student performance on NBCE exams

Sandra R. Norton

Chiropractic institutions view student performance on the National Board of Chiropractic Examiners' (NBCE) licensing exams as a key indicator of their overall effectiveness in preparing students for future practice. The significance of the exams is reinforced by the Council of Chiropractic Education, which requires accredited institutions to share annually an overall weighted average of the four most recent years' NBCE Parts I, II, III, and IV Exam completion rates. Not surprisingly, institutions and researchers have spent a great effort attempting to identify predictors of student performance on the assessment. In 2011, Parker University developed the Academic Retention Exam (ARE), a pretest for NBCE exams. Through the ARE, which has been a reliable indicator of student performance on the NBCE, the institution has created an instrument that can anticipate students' performance on the licensure exams. Following the ARE, which is administered twice a year, students receive a personalized performance report outlining opportunities for improvement before attempting the NBCE exams. To assist students in addressing deficiencies, College of Chiropractic faculty members facilitate online National Board Success Strategies courses that are designed around the core subject areas assessed on the NBCE exams. Additionally, the college uses information from the ARE to refine the overall curriculum and improve individual courses. The ARE supplies valuable feedback to students, instructors, and administrators. It is anticipated that its continued use, coupled with related intervention strategies, will result in increases in student performance on the NBCE exams. (This is a conference presentation abstract and not a full work that has been published.)

A physical model of lumbar spine fixation for use in palpation and adjustment training

Edward Owens, Ronald Hosek

We are developing an adjusting mannequin for student use that will incorporate a fixation mechanism to simulate intervertebral fixation. The current model uses 3D-printer technology to create realistically-shaped lumbar vertebrae and a sacrum, with mechanically accurate motions. The intervertebral discs are modeled as incompressible ball and socket joints allowing for free rotation, flexion, and extension within the ranges allowed by elastic connectors and the posterior facets. Realistic coupling of lateral flexion and rotation have been observed. The innovation lies in the addition of a simulated set of intersegmental "muscles" in the anatomic positions of the rotator brevis muscles. Mechanical tightening of one or more of these simulated muscles prevents motion at the facet joint the muscle crosses. The facetal fixation leads to clear alteration of the intersegmental motion at the specific segment affected. Even in its rough, bone-only state, the model can be manipulated by hand to simulate motion palpation or adjustments. Such exploration is quite educational. Future work will continue the development of remote control electromagnetic fixation methods, as well as coatings and sheaths to add simulated soft-tissue over the skeleton to provide more lifelike palpation. (This is a conference presentation abstract and not a full work that has been published.)

Using technology to measure adjustment vectors as well as force and speed

Edward Owens, Ronald Hosek, Brent Russell

Our technique department has teamed up with researchers to develop instrumentation for measuring the mechanics of spinal adjustments. To date, most such work has focused on adjustment preload, peak load, and rate of application. Another adjustment factor, direction, or vector, is worth examining but has largely been ignored. While we have a current system that can measure transmitted adjustment force vectors accurately for single-hand lumbar adjustments with the patient prone, side-posture adjustments are more complicated, because they commonly involve 2 contact points. The hand contact on the spine is over a relatively small area and can be measured with a contact pressure transducer. There is a second, more distributed stabilizing contact between the patient's hip and the doctor's thigh that is much more difficult to assess. Previous work has shown that the thigh force contributes to the transmitted loads sensed by in-table force plates, but we have not measured its magnitude or direction with any precision. We are currently developing a system that combines transmitted loads from a force plate, plus contact forces with a hand transducer and body position monitoring with inertial motion units to provide a full picture of the forces developed during side-posture lumbar adjustments. While in the developmental stages, this system will first be used to measure the adjustment vectors provided by experts in the technique. Such data can be used to establish training targets for students. (This is a conference presentation abstract and not a full work that has been published.)

Using a learning management system to facilitate students' transition from classroom to clinic

Stephen Paterno, Doug Sanford

Transitioning students from the didactic to clinical portion of a Chiropractic program is one of the most challenging aspects of a

chiropractic curriculum. During this transition, students must become familiar with a myriad of policies, orient to new educational expectations, and integrate knowledge from academic courses into the clinical setting. Clinic faculty doctors and students spend a large portion of this time reviewing clinical procedures and remediating skills not mastered during the academic portion of the program. Consequently, time that could be used for advancing students' core clinical skills is lost. To make the move to clinics more efficient and effective, clinic faculty leveraged an online learning management system to flip the traditional instructor-led transition to clinic. Before the change, clinic faculty doctors and students spent several days in face-to-face orientation sessions reviewing clinic procedures and remediating core skillsets. By incorporating asynchronous digital strategies, including discussion boards and online assessments, clinic faculty transferred responsibility for learning much of the information taught previously in face-to-face lecture sessions to students and repurposed class time for skill development. The time required for orienting students to the clinical setting has been decreased and students now possess a deeper understanding of clinical policies and procedures. Students see patients sooner as a result of the change, allowing them increased opportunities to refine and develop clinical skills. The workload for clinic faculty has been reduced significantly, allowing them more time to mentor students in the development of the clinical skills necessary for patient care. (This is a conference presentation abstract and not a full work that has been published.)

Research capacity building with limited resources

Katherine Pohlman, William Watson, Harrison Ndetan

Rationale: Building research capacity is important to produce a sound evidence base for healthcare. Research capacity includes conducting research projects and teaching evidence-based concepts. For non-research intensive universities, building research capacity is challenging due to limited resources, including lack of funds, lack of mentors, and lack of time. **Innovation:** Two innovative faculty development workshop series have been developed with limited resources to increase research capacity. The first, "0toPrez," guides faculty to develop a research project from ground zero through presentation. The series started with an open house for faculty members to discuss research interest and form teams. Two teams of participants ($n = 9$) and 3 individual research questions were developed. Full workshop classes have been given every 4 to 6 weeks that walk the participants through the conduction of a project. In between these workshops, participants work on implementing the concepts discussed. Based on the success of this initiative, this workshop series will start each fall and target different programs on campus. The second is called the Process of Integrating Evidence (PIE). Key faculty members from each college of chiropractic department were nominated by the Academic Leadership Team as potential change leaders. Using the train-the-trainer model, this workshop series is tailored to focus on building faculty members' research literacy and developing effective teaching techniques essential for the successful integration of research concepts throughout the college of chiropractic educational curriculum. **Potential Impact:** These workshops appear to be sustainable programs with limited resources, which can increase faculty members' research knowledge and skills at nonresearch-intensive universities. (This is a conference presentation abstract and not a full work that has been published.)

Using scholarly posters as a group active learning session to teach subluxation theories

Eric Russell

According to Bonwell and Eison, active learning is "anything that involves students in doing things and thinking about the things they are doing." Active learning has been demonstrated to increase learning and retention in students. In teaching subluxation theories, assigning the group project of creating a scholarly poster is one of several active learning sessions that have been used in the class. Students are assigned groups and asked to develop and present a scholarly poster on a subluxation theory covered on NBCE Part II exam. This activity is designed to promote conference presentation skills and apply the knowledge gained to the theory. Each associated subluxation theory contains information and characteristics that is unique to it. Students must learn the key characteristics of each theory and know when it applies. For this assessment, they must understand and synthesize the information into a singular concept. Each theory is taught through a system that includes patient presentation, physical, orthopedic, neurologic exam findings, associated physiology, and how the theory compares and contrasts to other relevant theories. The poster presentations must include a title, the author's name, an introduction, the main points of the theory, including chiropractic relevance, conclusions, and references. After the students have completed their posters, they practice presenting the poster to each other to mimic an academic poster presentation and to teach each other the concepts. Faculty and staff then are invited to a poster presentation open house. Peer–peer feedback is used and the posters are graded using a rubric. To date, feedback has been positive. (This is a conference presentation abstract and not a full work that has been published.)

Chiropractic international portability: a case study

Eric Russell

International portability has been an emphasis of the Federation of Chiropractic Licensing Boards (FCLB). In 2011, only two states would allow New Zealand College of Chiropractic (NZCC) graduates to apply for licensure. In 2012, the author embarked on an effort to increase international portability for NZCC graduates. By the end of October 2014, 13 states allowed NZCC graduates to apply for licensure. An emerging scenario is for a US resident to get a Baccalaureate degree at a US Department of Education accredited institution, study chiropractic at a fully accredited foreign chiropractic college, pass all US Boards, and return to the United States to apply for licensure. However, there are challenges: (1) Some statutes state, "CCE approved only colleges." Internationally, chiropractic colleges are accredited by their own government and respective regional chiropractic accrediting bodies. (2) Some statutes and rules specifically say "Doctor of Chiropractic (DC) degree." The DC degree is offered only in the United States and Canada. Elsewhere in the world, it is a bachelors or masters, depending on national accrediting agencies. (3) For prerequisites, there often is language that requires US Department of Education accreditation. Items 1 and 2 are issues of "equivalency" and an understanding of how education and accreditation (national and chiropractic) functions for foreign chiropractic colleges. Many States have opportunity to determine equivalency and others simply do not. For item #3, it will always be difficult for a foreign resident to train internationally and then apply in the United States. (This is a conference presentation abstract and not a full work that has been published.)

Enabling interprofessional learning through accreditation

Michael Shobbrook, Kylie Woolcock

Rationale: In Australia, 14 health professions, including chiropractic, are regulated through the National Registration and Accreditation Scheme. Programs of study in each profession are assessed against accreditation standards by an accreditation authority appointed by its national registration board. The Scheme has a focus on developing a responsive, flexible and sustainable health workforce, and enabling innovation in education. All entities operating in the Scheme contribute to these objectives. Accreditation authorities must support educational innovation, including interprofessional learning, in programs of study. **Innovation:** In June 2015, accreditation councils ran a multistakeholder workshop on Collaborating for Patient Care – Interprofessional Learning for Interprofessional Practice. This workshop considered the health service drivers of interprofessional practice, examples of interprofessional education, and the role of accreditation standards and processes in enabling good interprofessional education. A set of proposed interprofessional learning principles and interprofessional competencies, developed by Professor Maree O'Keefe through a research and consultation in a National Teaching Fellowship, were presented. The workshop was followed by joint discussions between national registration boards and accreditation councils, and a separate meeting on the implications of the workshop outcomes for accreditation processes and standards. There was broad support for the interprofessional learning principles and competencies developed, and agreement by accreditation councils to use these as a reference in accreditation standards and processes across all health professions participating in the Scheme. **Potential**

Impact: This initiative supports cross-profession consistency in accreditation standards and processes, ensuring that accreditation of health profession programs is an enabler of interprofessional learning. (This is a conference presentation abstract and not a full work that has been published.)

Using film art to convey evidence-based clinical practice concepts

John Stites

Rationale: Novice learners sometimes have difficulty understanding key concepts of evidenced-based clinical practice (EBCP), particularly if they have limited exposure to epidemiology. A number of short films have been produced to illustrate foundational concepts in a simple and entertaining way. These films are used in conjunction with other educational interventions to engage the learner in developing a stronger foundation in EBCP principles. **Innovation:** Three films have been produced with a fourth film currently in production. One film is purely introductory with limited educational content. This film was designed to introduce a workshop. A second film explores the concepts of Relative Risk, Absolute Risk Reduction, and Numbers Needed to Treat. The third film examines Sensitivity, Specificity, and Likelihood Ratios. The film in production illustrates the difference between statistical significance and effect size. The process begins with identifying the essential teaching elements and developing a creative script, and framing the story to illustrate the teaching points in an entertaining and engaging manor. From there is casting, preproduction, staging, filming, and postproduction editing with emphasis on production values. This is accomplished with limited resources and only one professional: the videographer/editor. **Potential Impact:** These films have been used in a variety of workshops and continuing education venues and have been very well received. The concepts are introduced in a highly accessible way and allow the instructor to go into as much depth as is appropriate for the audience. The films have been used in teaching by a variety of different professions and disciplines. (This is a conference presentation abstract and not a full work that has been published.)

Faculty development in interprofessional communities of practice: using student learning assessment results for course-based scholarship

Noni Threinen

Rationale: Faculty must use student learning assessment data as evidence of required competencies to meet licensure and accreditation expectations, and to improve curriculum. This project helped faculty leverage their time and the use of assessment data as a foundation for course-based scholarly inquiry. During dedicated weekly professional development sessions, faculty participated in interprofessional communities of practice (CoP) to apply educational research methods. **Innovation:** A total of 22 faculty from two professional colleges volunteered to participate in facilitated CoP with approval from their program dean. Within the initial 2-year period, the scholarly inquiry model groups were introduced to a qualitative action research perspective. Groups focused on classroom and clinical educational settings. Group members collaborated across disciplines and departments to develop multifaceted learning questions, gather relevant assessment data and make interpretations for curriculum decisions. Multiple opportunities for faculty to develop educational research projects and presentations emerged. A total of 20 faculty successfully designed class/clinic educational research projects and completed a literature review for each project. To date, 4 faculty completed Institutional Review Board (IRB) applications and 3 faculty completed projects as designed. Some faculty needed more time or support for implementing projects in upcoming terms when courses were scheduled, ongoing data collection or statistical analysis of data. **Potential Impact:** Interprofessional development activities have expanded to include CoP for learning about and applying student learning assessment results to promote educational scholarship and curricular improvement. Communities of practice group choices have evolved into Focused Inquiry Groups, Action Plan Project Groups, and Team-based Teaching and Learning Groups during scheduled professional development sessions. (This is a conference presentation abstract and not a full work that has been published.)

Hiring clinicians in an educational setting

Anthony Tibbles, Phil Decina, Craig Jacobs, Evelyn Humphries

Rationale: Health professions education programs have adopted an evidence-based approach to content and application. Instructors need specific skills of evidence based medicine (EBM) and must be effective in teaching challenging clinical settings. Further, recent recommendations for effective medical education propose specific approaches to reach improved training of health providers. The approaches require specific abilities from clinical instructors, such as teaching to standard learning outcomes. Hiring appropriate candidates into clinical teaching roles is a priority for educational programs. Training clinical faculty is expensive due to direct and indirect costs. Further, if ineffective faculty are hired, further costs are associated with rectifying the problem. In such cases, costs are related to severing the employment relationship and loss of faculty can have a negative effect on an institution's clinical program. **Innovation:** To increase the success of hiring into clinical faculty positions, the Canadian Memorial Chiropractic College developed a competency framework for use in the interview process. This approach includes a scenario-based demonstration of teaching and patient management to ensure that candidates can effectively teach EBM skills in the clinical environment. The format of the assessment is an Objective Structure Clinical Examination (OSCE) during which candidates are challenged to react to events that unfold in clinical scenarios with standardized patients and students. Scenarios have been created to fit specific competency sets for CMCC's teaching clinics. **Potential Impact:** Competency-based, scenario interviewing should increase the effectiveness of hiring chiropractors into the clinical teaching environment. It also should decrease the costs associated with faculty turnover. (This is a conference presentation abstract and not a full work that has been published.)

Use of technology to incorporate clinical education into an electronic health record

Anthony Tibbles, Phillip Decina, Peter Kim, Susan Rutherford, Ravi Samlal

Rationale: In the educational clinical setting, an electronic health record (EHR) offers the opportunity to ensure students perform certain educational and clinical reasoning exercises as they work through the assessment of patients. Performance of such tasks during training should ensure the practice after graduation. **Innovation:** As the Canadian Memorial Chiropractic College (CMCC) adapted an EHR for use in its teaching clinics, several clinical education steps were built into the patient assessment form and tracking tasks. At specific stages of the patient assessment, students are required to consider a patient's complaint in relation to proximal and distal body regions, not simply the area of complaint. This exercise is intended to ensure the interns consider the patient as a whole. Further in the evaluation, the interns are required to consider all categories of etiology, so as not to prematurely determine a mechanical cause of the patient's complaint. Each patient assessment includes an evaluation of case complexity. The CMCC developed a complexity matrix for such a purpose. Complexity is determined for each of four components of each file: history, examination, diagnosis, and plan of management. The acquisition of business skills was a predetermined requirement for the electronic healthcare record for CMCC. As part of every patient visit, the intern constructs an invoice for fee and activities of the visit. The educational tasks built into the EHR have clinical value and, therefore, become part of the health record. **Potential Impact:** These tasks are tracked to monitor learning and to provide feedback to the CMCC curriculum. (This is a conference presentation abstract and not a full work that has been published.)

Putting it together before clinic: helping students contextualize knowledge and build core clinical skills

William Watson

Because of the intensive nature of most chiropractic programs, academic courses often are taught in silos (i.e., isolated content with a lack of integration between courses and no direct relevance to patient care). In this environment, students often struggle to integrate content from academic courses with the clinical skills necessary for patient care. Not surprisingly, clinic faculty often report that students are ill-

prepared for the clinical portion of the curriculum. Parker University implemented a series of capstone projects to provide students with increased opportunities to contextualize the information they learn in their academic courses and develop core clinical skills. In collaboration with clinic faculty and the institution's Center for Teaching and Learning, academic faculty designed and implemented projects that use active learning approaches and formative assessments to provide students with contextualized, clinical-based experiences each term. Aligned to core outcomes that build across terms, these projects help students make better connections between courses and across terms, while also engaging students in authentic, real-world clinical experiences. As a part of the requirements for the projects, faculty self-assess their effectiveness and work collaboratively to assess student performance. This initiative has increased alignment between the academic and clinical portions of the chiropractic curriculum and resulted in numerous improvements to the pedagogic strategies used by academic faculty. Students now possess a better understanding of how information in one course relates to what they will learn in subsequent courses and they are better-equipped for the clinical portion of the program. (This is a conference presentation abstract and not a full work that has been published.)

Launching a new chiropractic program at Macquarie University, Sydney, Australia

Stephney Whillier, Rosemary Giuriato

Rationale: It is incumbent on institutions to revise the effectiveness of their programs constantly. Macquarie University, Sydney, Australia, launched the new Learning and Teaching Strategic Framework white paper in 2015, which requires a "review and reaccreditation cycle, encouraging ongoing reflection." Research results further prompt reform. Results from a 2015 questionnaire to past graduates (ethics reference number 5201401167) indicated a self-rating of preparedness for clinical work at 67.3 ± 19.4 (scale from 0–100), with a high rating for a need for communication skills (97.3%), research skills (94.6%), practice management skills (94.6%) and knowledge of ethics, law and jurisprudence (89.2%). **Innovation:** Given the need to equip emerging chiropractors with a background in clinical sciences, clinical research, and professional practice, these were allocated as the three major streams of learning and teaching. All units in the 3-year Bachelor of Chiropractic and 2-year Master of Chiropractic programs were aligned to these streams. The program was reassessed for building the streams, resulting in major and ongoing adjustments to the curriculum. **Potential Impact:** The intent of changes aligns with the Macquarie University Strategic Framework, as stated by Vice Chancellor and Professor Bruce Dowton, "foster skills that apply beyond the classroom and into the workplace. Cross-disciplinary learning will give students not only expertise in their field, but also a new perspective on its place in the world. Internships, work experience and entrepreneurial guidance will help apply their skills and understanding to real problems, and encourage them to grow." (This is a conference presentation abstract and not a full work that has been published.)

Birth of the Keiser University chiropractic program: "you can do anything but you can't do everything"

Michael Wiles

Every chiropractic faculty member or administrator has ideas as to what a new program might look like – but when it comes time to actually start a new chiropractic program, one is quickly faced with the reality that, "You can do anything but you can't do everything." The development of the new program in chiropractic medicine at Keiser University illustrates a wide range of opportunities and challenges (structural and functional) and the approach that was taken to prioritize key foundational elements of the program. These included early clinical exposure and experience, the integration of foundational and applied clinical sciences (formerly known as basic and clinical sciences), an emphasis on evidence-based practices (clinically and educationally), an emphasis on community-based clinical education, and an emphasis on the role of the chiropractor as a spine-care practitioner and a team-member in the healthcare system. Balanced with these foundational and pedagogical principles were functional (policies, procedures, admissions, and so forth) and structural (learning spaces, equipment, furnishings) considerations as well as the recruitment and selection of new faculty, and perhaps most importantly, attention to the requirements for programmatic and regional accreditation. At the interface of this multidimensional process was the inevitable stress of wanting, but not being able, to do everything on the "wish-list" (at least, not all at once). (This is a conference presentation abstract and not a full work that has been published.)